



#### NOTES ON BASE

This sheet is one in a series of maps of the Galilean satellites of Jupiter at a nominal scale of 1:15,000,000. This series is based on data from the Galileo Orbiter Solid State Imaging (SSI) camera and the Voyager 1 and 2 spacecraft.

#### PROJECTION

Mosaic and Polar Stereographic projections used for this map of Ganymede are based on a sphere having a radius of 262.345 km. The scale is 1:15,000,000 at 45° latitude for both projections. Longitude increases to the west in accordance with the International Astronomical Union (1971) (Davies and others, 1996). Latitude is planographic.

#### CONTROL

The geometric control network was constructed at the RAND Corporation (Davies and others, 1998; Davies and Katayama, 1981). (This map of Ganymede utilized RAND's most recent solution as of November 1999. This process involved selecting unique points on the individual images, making fixed measurements of their locations, using known locations to correct the geometric distortions, and covering the measurements to minimize in the final plane. These data are combined with the camera focal lengths and navigation solution as input to photogrammetric triangulation software that solves for the best-fit sphere, the coordinates of the control points, the three orientation angles of the camera at each exposure (right ascension, declination, and twist), and an angle (θ<sub>g</sub>) which defines the orientation of Ganymede in space. θ<sub>g</sub> is this solution 44.064°—the angle along the equator to the east, between the P' meridian and the equator's intersection with the celestial equator at the vernal equinox J2000. This solution places the crater Aue at a defined longitude of 128° (Davies and others, 1996).

#### MAPPING TECHNIQUE

This global map base uses the best image quality and moderate resolution coverage supplied by Galileo SSI and Voyager 1 and 2 (Davies, 1987; Becker and others, 1998; Becker and others, 1999; Becker and others, 2001). The monochrome and color data were both processed using Integrated Software for Images and Spectrometers (ISIS) (Ellison, 1997; Gaddis and others, 1997; Toros and Becker, 1997). The individual images were radiometrically calibrated and photometrically normalized using a Lunar Lambert function with empirically derived values (McLennan, 1991; Kirk and others, 2000). A linear correction based on the statistics of all overlapping areas was then applied to minimize image brightness variations. The image data were selected on the basis of overall image quality, comparable original input resolution (from 30 km/pixel to as much as 180 km/pixel), and availability of moderate-contrast/high-contrast images for topography and albedo. The black and white monochrome base mosaic was constructed separately from the three-band color mosaic. Although consistency was achieved where possible, different filters were included for the monochrome global image coverage as necessary for Voyager 1 and 2; clear, near-IR

Index showing approximate resolution of black and white images included in the mosaic:

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